Type. Male, tape-recorded and collected near Mokolo (10°49′N, 13°54′E), northern Cameroon, 7 June 1972, by C. Chappuis. Deposited in Muséum National d'Histoire Naturelle, Paris (C.G. 1977–58).

Measurements of type. Wing 56.5 mm, tail 42.5 mm, bill 13 mm, tarsus 21.5 mm.

Original series. The type plus two other males from southern Chad, one from Baïbokoum, tape-recorded and collected by C. Chappuis, 13 June 1972 (C.G. 1979–649), one from Bekao, collected by J. Vielliard, 2 August 1970 (C.G. 1972–79).

Acknowledgements

We are grateful to the curators who provided all facilities to examine the collections at the American Museum of Natural History in New York, the British Museum (Natural History) in Tring, the Field Museum of Natural History in Chicago, the Institut Royal des Sciences Naturelles de Belgique in Bruxelles, the Koninklijk Museum voor Midden-Africa in Tervuren, and the National Museum of Natural History (Smithsonian Institution) in Washington. The work of C. Erard in the U.S. museums was possible thanks to a grant from the Chapman Fund of the American Museum of Natural History.

References:

Chappuis, C. 1974. Illustration sonore de problèmes bioacoustiques posés par les oiseaux de la zone éthiopienne. *Alauda* 42: 467–500.

Elgood, J. H. 1982. *The Birds of Nigeria.* B.O.U. Check-list no. 4. British Ornithologists' Union.

Erard, C. 1974. The problem of the Boran Cisticola. *Bull. Brit. Orn. Cl.* 94: 26–38.

Lynes, H. 1930. Review of the genus *Cisticola. Ibis* (12)6, Suppl.: 1–673.

Lynes, H. & Sclater, W. L. 1934. Lynes-Vincent tour in central and west Africa in 1930–31. Part II. *Ibis* (13)4: 1–51.

Mackworth-Praed, C. W. & Grant, C. H. B. 1973. *Birds of West Central and Western Africa.* Vol. 2. Longmans, London.

Payne, R. B. 1986. Bird songs and avian systematics. *Current Orn.* 3: 87–126.

Traylor, M. A., Jr. 1986. Genus *Cisticola* Kaup. Pp. 84–125 *in* E. Mayr & G. W. Cottrell (eds), *Check-list of Birds of the World.* Vol. 11. Museum of Comparative Zoology, Harvard.

Vielliard, J. 1972. Données biogéographiques sur l'avifaune de l'Afrique centrale. II. *Alauda* 40: 63–92.

White, C. M. N. 1962. A check list of the Ethiopian Muscicapinae (Sylviinae). Part II. *Occas. Papers Natl Mus. South. Rhodesia* no. 26B: 653–694.

Addresses: C. Chappuis. Les Chardonnerets, Lotissement du Fer à Cheval, La Bouille, 76530 Grand-Couronne, France. C. Erard, Laboratoire de Zoologie (Mammifères & Oiseaux), Muséum National d'Histoire Naturelle, 55 rue Buffon, 75005 Paris, France.

Breeding seabirds of Rapa (Polynesia): numbers and changes during the 20th century

by Jean-Claude Thibault & Albert Varney

Received 13 September 1990

The island of Rapa and its satellite islets, situated in the subtropical zone, have an assemblage of breeding seabirds that differs from the rest of

Polynesia in the following ways: the absence of *Sula* spp. and *Sterna fuscata*, and the predominance of petrels (7 of the 11 species; Garnett 1984, Holyoak & Thibault 1984). There are two endemic forms, *Puffinus assimilis myrtae* and *Fregetta grallaria titan*. Of all the other South Pacific archipelagos, Rapa is most similar to the Kermadec Islands (New Zealand) (41% species in common: Robertson & Bell 1984, this study). Here we present new data on the distribution and numbers of breeding seabirds, and a comparison between today and the situation during the first part of the century, based on the results of the Whitney South Sea Expedition (WSSE), 1920–35.

Rapa (27°37′S,144°20′W), Austral Islands, has an area of 40 km^2 and reaches a height of 650 m. Politically part of French Polynesia, it is remote, 480 km from the closest island (Raivavae). It is surrounded by high and steep rocky coasts. There are 10 satellite islets (Fig. 1), the smallest measuring less than 1 hectare and the largest about 26 hectares. Table 1 presents information on the animals that have been introduced.

There was considerable human influence in the past, as can be seen by the effects on plant life: cultivation (*Xanthosoma sagittifolium* on Tarakoi), land-clearing (remains of a grove of *Metrosideros collina* on Tauturou) and plants introduced by man. Today, only Karapoo rahi has an important grove of *Pandanus tectorius* which should be protected (Paulay 1982).

Historical information comes mainly from Ernest Quayle's journal, written during the Whitney South Sea Expedition to Rapa from 14 to 20 April 1921 and from 15 to 26 February 1922 (Bryan, MS). J.-C. Thibault was there from 15 October to 17 December 1974, and J.-C. Thibault and A. Varney between 18 December 1989 and 6 January 1990.

Diurnal seabird numbers were estimated by counting nests with egg or chick, and the total adult population on the site. Nocturnal or burrowing petrels (*Fregetta grallaria* on Tarakoi Islet, and *Pterodroma nigripennis* on Tauturou Islet) were estimated by counting the occupied nests in plots (3 of 728 m^2 for *F. grallaria* and 10 of 100 m^2 for *P. nigripennis*). The number of breeding pairs was then estimated on the basis of the total area available for the birds (Table 2).

Systematic list

KERMADEC PETREL *Pterodroma neglecta*

Breeds on certain cliffs on the main island (Makatea, Tevaiputa), and on rocky faces and slopes inland (Haurei, Pukumaru, Mauroa, Perau). There were no more than a few dozen pairs. On the islets: breeds on Rapa iti (2–3 p.), Tauturou (7–10 p.), Karapoo iti (10–20 p.), Karapoo rahi (100–500 p.). Total population was estimated at less than 1000 pairs.

MURPHY'S PETREL *Pterodroma ultima*

Breeds exclusively on a limited number of islets (Rapa iti, Tauturou, Tapiko, Karapoo rahi and Karapoo iti). Population was estimated at 10–99 pairs.

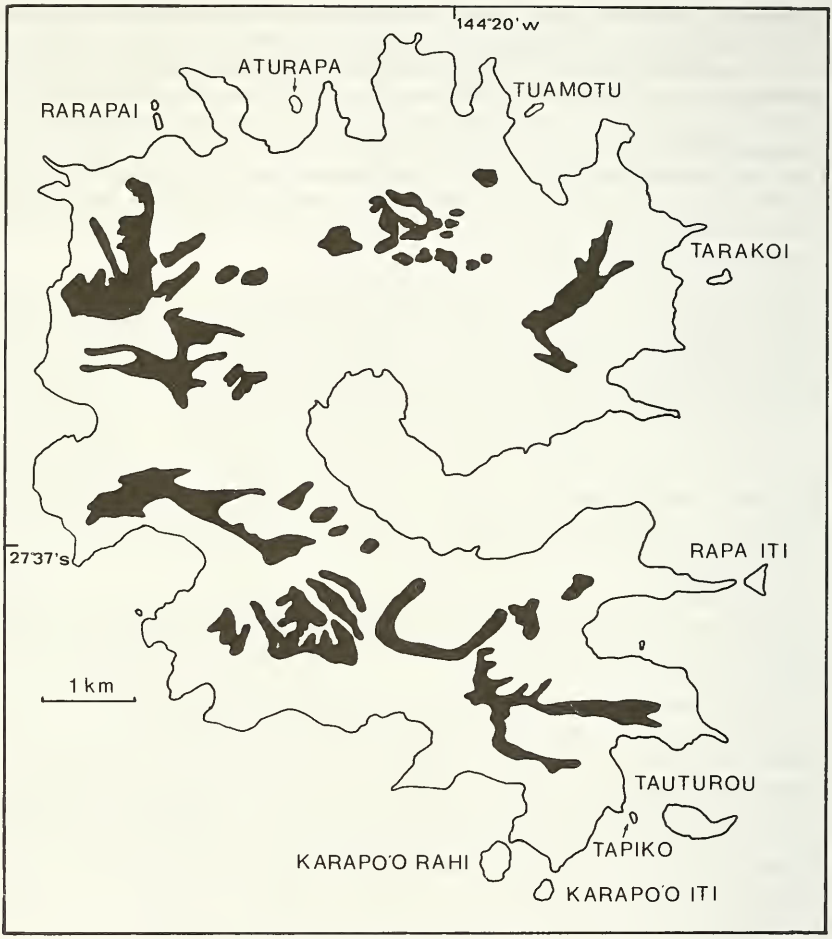

Figure 1. Rapa and its islets.

BLACK-WINGED PETREL *Pterodroma nigripennis*

In 1974, bred on Rapa iti and Tauturou (population estimated at 200–300 pairs). In 1989, a more precise count, at a better time of year, gave an estimate for the colony on Rapa iti around 34–50 p., and on Tauturou of 657 p. (185–1645, 95% confidence limits).

CHRISTMAS SHEARWATER *Puffinus nativitatis*

Breeds on Tarakoi (5–10 p.), Karapoo iti (>100 p.), Karapoo rahi (>10 p.) and perhaps a few pairs on Tauturou.

LITTLE SHEARWATER *Puffinus assimilis*

In 1974, bred on Tauturou (200–300 p.) Rapa iti (40–50 p.), Karapoo iti (15–20 p.) and Karapoo rahi (<10 p.). Absent from breeding locality

TABLE 1
Introduced animals on Rapa and its islets

Island	Area (ha)	*Rattus exulans*	*Oryctolagus cuniculus*	*Capra hircus*	*Felis catus*	Number of seabird species breeding
Rapa	>4000	P	—	5–6000**	P	5–7
Rapa iti	±3.5	P	—	23***	—	8–9
Tauturou	26	P	P*	—	—	8
Tapiko	<1	—	—	—	—	3–5
Karapoo iti	<2	—	—	—	—	8–9
Karapoo rahi	±6	P	—	1	—	7
Rarapai	<2	—	—	—	—	5
Atuarapa	<2	?	—	6***	—	0
Tuamoto	<1	?	—	—	—	0
Tarakoi	<2	—	—	5***	—	6

*present in 1922 (Quayle, MS), perhaps extinct recently, but seen in 1988.
**Marc Liblin, pers. comm. 1989.
***pers. obs., 1989.
P present.
? unknown.
— absent.

during the 1989 visit. Should be looked for breeding at the foot of cliffs inland on the main island (Haurei).

WHITE-BELLIED STORM-PETREL *Fregetta grallaria*

Its status is being currently revised (Bretagnolle & Thibault, unpub. MS). Breeds on Tarakoi (1989: 357 occupied nests; 288–412, confidence limits 95%), Rapa iti (1 ex. in 1974 and 1 ex. in 1989), Tapiko (10–50 p.), Karapoo iti (found in 1974 and 1989, but no count was done due to difficult access) and Rarapai (10–99 p.).

WHITE-THROATED STORM-PETREL *Nesofregetta fuliginosa*

Breeds on Rarapai (25–99 p.), Tarakoi (10–99 p.), perhaps Tapiko and Karapoo iti (some seen in flight, but no count).

RED-TAILED TROPICBIRD *Phaethon rubricauda*

Breeds (several hundred pairs) on the main island on all the big cliffs and in certain inland areas (Ahurei, Anarua). Also breeds on Tarakoi (8–15 p.), Rarapai (5 p.), Rapa iti (5–10 p.), Karapoo iti (5–10 p.), and Karapoo rahi (10–30 p.). Population was estimated at about 1000 pairs.

BLUE-GREY NODDY *Procelsterna cerulea*

A few dozen pairs breed on the cliffs of the main island (Makatea, Rukuaga), inland (Ahurei), and on the islets: Tarakoi (100–500 p.), Tauturou (>10 p.), Rarapai (>50 p.), Rapa iti (>50 p.) and Karapoo iti (50–99 p.). Population was estimated at 1000–2000 pairs.

TABLE 2
Numbers of breeding seabirds on Rapa and its islets (expressed in pairs)

Island	*Pterodroma neglecta*	*Pterodroma ultima*	*Pterodroma nigripennis*	*Puffinus nativitatis*	*Puffinus assimilis*
Rapa	several dozens	—	—	?	?
Rapa iti	2–3	P	34–50	—	40–50
Tauturou	7–10	P	657 (185–1645)	several	200–300
Tapiko	—	P	—	—	—
Karapoo iti	10–20	P	—	>100	15–20
Karapoo rahi	100–500	P	—	>10	<10
Rarapai	—	—	—	—	—
Tuamotu	—	—	—	—	—
Tarakoi	—	—	—	5–9	—
Totals	B3	B2	B3	B3	B3

Island	*Fregetta grallaria*	*Nesofregetta fuliginosa*	*Phaethon rubricauda*	*Procelsterna cerulea*	*Anous stolidus*	*Gygis alba*
Rapa	—	—	several hundred	several dozens	P	P
Rapa iti	?	—	5–10	>50	20–50	<15
Tauturou	—	—	—	>10	20–50	60–80
Tapiko	10–50	?	—	?	20–25	—
Karapoo iti	P	?	5–10	50–100	100–200	—
Karapoo rahi	—	—	10–30	—	10–99	100–999
Rarapai	10–99	25–99	5	>50	80–100	—
Tuamotu	—	—	—	—	—	—
Tarakoi	357 (288–412)	10–99	8–15	100–500	50–100	—
Totals	B3	B3	B3	B4	B4	B4

B2 population estimated at 10–99 pairs.
B3 population estimated at 100–999 pairs.
B4 population estimated at 1000–9999 pairs.
P present.

BROWN NODDY *Anous stolidus*

Breeds in limited numbers on cliffs on the main island. On the islets, breeds on Tarakoi (50–99 p.), Rarapai (80–99 p.), Rapa iti (20–50 p.), Tauturou (20–50 p.), Karapoo iti (100–200 p.), Karapoo rahi (10–99 p.) and Tapiko (20–25 p.). Population was estimated at 1000–2000 pairs.

FAIRY TERN *Gygis alba*

Breeds on the main island (rocky faces of Ahurei: 20–30 p.) and a very limited number in the inland forests, except in one locality (Maii) where it is relatively numerous. On the islets: Tauturou (60–80 p.), Karapoo rahi (100–999 p.) and Rapa iti (<15 p.). Population was estimated at 1000–2000 pairs.

Discussion

Trends in diversity

Two species found today were not mentioned by the Whitney South Sea Expedition in 1921–22. *Nesofregetta fuliginosa* has a seasonal breeding period below this latitude (Rapa, Gambier) lasting from the beginning of summer until the beginning of the southern winter (Lacan & Mougin 1974, Holyoak & Thibault 1984), which suggests that the species may have been absent during the visit of the WSSE. It was discovered in October 1974 (Holyoak & Thibault 1984). Secondly, *Pterodroma nigripennis* was probably absent from Rapa at the beginning of the century. Its breeding is also seasonal and the WSSE took place during the chick-rearing season. The WSSE searched in vain for the "blue shearwater" on Rapa and the islets, including the two islets where the species nests today (Quayle, MS). In April 1925, Kelsall did not find any either, although he found an example of *Puffinus assimilis*, a species which breeds in the same sites as *P. nigripennis*. In his list compiled during the 1920s, Stokes did not mention its Polynesian name (*titi*), although he cited other seabirds' names (Stokes & Marshall 1955); this indicates that the inhabitants of Rapa did not know the species well enough to give it a name. However, near Marotiri (=Bass I.), situated 83 km south of Rapa, the WSSE collected three specimens and said that the species was "plentiful". Found breeding in 1974 (Holyoak & Thibault 1984), it seems that the species colonized Rapa during the 20th century, during which period it expanded in the South Pacific (Imber 1985).

Trends in population numbers

A careful reading of the information in the WSSE's journals, compared to the data gathered in 1974 and 1989, indicates no real decrease in the population of any species between 1922 and 1989, except for *Gygis alba*, which Quayle said was numerous in wooded ravines, although this was not confirmed in 1974 and 1989. It may have been preyed upon by feral cats, although these were already present at the time of the WSSE (Quayle, MS).

While chicks of some petrels (*Pterodroma neglecta, P. ultima, Puffinus nativitatis*) were taken for food at the beginning of the century and up until 1970, they are not eaten today, thanks to a better standard of living and the availability of imported food (e.g. frozen chickens). Actually, the WSSE found very few *P. neglecta* on the breeding sites despite the fact that their visit corresponded to the chick-rearing season. Quayle (MS) found remains of fires with burned petrel bones. Thus the change in human activities may have been beneficial to the petrel populations.

Feral cat and rat predation

Rattus exulans is found on the main island and most of the islets, with the exception of Rarapai, Tarakoi, Tapiko and Karapoo iti, and seems to have an adverse impact on the seabirds (Moors & Atkinson 1984), especially smaller species. It is relevant to note that the four islets mentioned above are the only ones where many storm-petrels are found breeding. It seems

probable that the chicks are preyed upon or that the adults are occasionally disturbed by the rats, a general situation in Eastern Polynesia (Gambier, Marquesas; pers. obs.).

Cats were introduced on the main island at an unknown date. Quayle (MS) noted their presence during his visit. The decrease of the *Gygis alba* population on the main island could be due to cats, and their presence could equally explain why *P. neglecta*'s nests are situated on inaccessible cliffs (cf. their situation on islets, where they nest on flat ground).

Influence of goats on the islets

Goats disturb the breeding seabirds, but more importantly, their presence leads to over-grazing, which in certain areas, e.g. Tauturou, causes soil erosion (see Trichet *et al.* 1986 for Rapa, Daly & Goriup 1987 for the general situation on the islets), creating poor conditions in the long run for the petrels which breed in burrows. The largest colony of *P. neglecta* is found on the only islet (Karapoo rahi) where there is an important grove of *Pandanus tectorius*, and the petrels often breed at their base. Elsewhere (e.g. Tauturou) exotic species (e.g. Guava *Psidium cattleanium*, a goat refuse) took advantage of other plants which were eliminated. However the development of the Guava on this islet did not affect *P. nigripennis*, which dig holes under their covering.

After comparing information on the seabird populations at the beginning and the end of the 20th century, it appears that the general situation, while improved, is still precarious, since the most abundant species are still not very numerous. Various conservation measures (classifying the islets as nature reserves, eliminating the goats) have been suggested to the authorities.

The seabird population of the Marotiri islets (83 km south of Rapa) has been insufficiently surveyed, but it is probably similar to that on Rapa (Quayle MS, Fosberg 1972). These islets are rarely visited and landing is especially difficult, which suggests that the birds are well 'protected'. However, as the extent of flat areas is less than 10 ha, the number of breeding birds is probably not large. Thus particular attention should be paid to the bird population, and especially to the two endemic forms, on Rapa and its satellite islets.

Acknowledgements

This work was accomplished for the Polynesian Ministry of Health, Scientific Research and Environment (FIRST no. 90/0008). We express our thanks to Claude Monnet and Philippe Siu for their help and encouragement in the organization of the expedition, to Lionel Watanabé, Mayor of Rapa, for his welcome, to Dr Vincent Bretagnolle who improved the MS with his criticisms and to Dr Jean-Louis Martin (AMNH, New York) who kindly made available the information concerning the Whitney South Sea Expedition to Rapa.

References:

Bryan, E. H., Jr. MS. Chronological summary and guide to the Whitney Expedition Journals. American Museum of Natural History, New York.

Daly, K. & Goriup, P. 1987. Eradication of feral goats from small islands. *I.C.B.P. Study Report* 17: 1–46.

Fosberg, J. R. 1972. Marotiri (Bass Rocks), Austral Islands. *Atoll Res. Bull.* (162): 9–10.

Garnett, M. C. 1984. Conservation of seabirds in the South Pacific Region: a review. Pp. 547–558 *in* J. P. Croxall, P. G. H. Evans & R. W. Schreiber (eds), *Status and Conservation of the World's Seabirds*. I.C.B.P. Tech. Publ. 2.

Holyoak, D. T. & Thibault, J.-C. 1984. Contribution à l'étude des oiseaux de Polynésie française. *Mém. Mus. Natl Hist. Nat.* 127: 1–209.
Imber, M. J. 1985. Black-winged Petrel, in *Complete Book of New Zealand Birds*. Reader's Digest, Sydney.
Lacan, F. & Mougin, J.-L. 1974. Les oiseaux des îles Gambier et de quelques atolls orientaux de l'archipel des Tuamotu (Océan Pacifique). *Oiseau* 44: 191–280.
Moors, P. J. & Atkinson, I. A. E. 1984. Predation on seabirds by introduced animals, and factors affecting its severity. Pp. 667–690 *in* J. P. Croxall, P. G. H. Evans & R. W. Schreiber (eds), *Status and Conservation of the World's Seabirds*. I.C.B.P. Tech. Publ. 2.
Paulay, G. 1982. Rapa Island and its weevils. *Discovery* 16: 25–31.
Robertson, C. J. R. & Bell, B. D. 1984. Seabird status and conservation in the New Zealand region. Pp. 573–586 *in* J. P. Croxall, P. G. H. Evans & R. W. Schreiber (eds), *Status and Conservation of the World's Seabirds*. I.C.B.P. Tech. Publ. 2.
Quayle, E. H. MS. Journal of the Whitney South Sea Expedition. Vols H & I. American Museum of Natural History, New York.
Stokes, J. F. G. & Marshall, D. S. 1955. Language in Rapa. *J. Polynesian Soc.* 64: 331–340.
Trichet, J., Jamet, R. & Gautheyrou, J. 1986. Reconnaissance des sols et des altérations de l'île de Rapa. Pp. 75–103 in *Rapa*. Direction des centres d'expérimentations nucléaires, Lefrancq, Candé.

Addresses: J.-C. Thibault, Antenne du Muséum National d'Histoire Naturelle et de l'Ecole Pratique des Hautes Etudes, Centre de l'Environnement, B.P. 1013, Papetoai-Mo'orea, Polynésie française. *Present address:* Parc naturel régional de la Corse, B.P. 417, F-20184 Ajaccio. A. Varney, Institut français de Recherche Scientifique pour le Développement en Coopération (ORSTOM), Centre de Tahiti, B.P. 529, Pape'ete, Polynésie française.

New and noteworthy bird records from Petén, Guatemala, including Tikal National Park

by Randell A. Beavers, Dale J. Delaney, Christopher W. Leahy & G. Frank Oatman

Received 31 August 1990

The inaccessible nature of the Department of Petén, Guatemala, has undoubtedly played a role in the limited amount of ornithological exploration in the region. Distribution records on the birds of Petén have been given by Moore (1859), Sclater & Salvin (1859), Sclater (1860, 1886), Salvin (1863, 1866), Salvin & Godman (1879–1904), Ogilvie-Grant (1893), Lantz (1899), Ridgway (1901–1950), Griscom (1932), Van Tyne (1935), Taibel (1955), Edwards (1959), Smithe & Land (1960), Smithe & Paynter (1963), Smithe (1966), Land (1970), Eisenmann (1971), Brodkin & Brodkin (1981), Ellis & Whaley (1981), and Wendelken & Martin (1986); and there are unpublished specimen records from the 1962 *Milwaukee Journal*/Milwaukee Public Museum expedition. From these sources, a total of 381 species of birds have been recorded from this Department, of which approximately 294 were found in Tikal National Park.